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AUTHOR Kass, Ethel R.; And Others
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ABSTRACT

This paper describes the philosophy and procedures of an educational intervention program with high risk infants which is part of the Infant Studies Project at UCLA. The intervention is directed specifically at providing mothers of such infants with techniques, practices, and observation skills which enhance maternal ability. High risk infants are identified at birth. Through home and clinic visits the intervention team develops an individualized program for each infant and family, based on (1) the developmental characteristics of the infant, (2) the nature of the parent-child interaction, and (3) the environmental resources and limitations of the family and home. The program focuses on improving the infant-mother interaction by training the mother to respond to the specific cognitive and developmental strengths and weaknesses of her infants. (Author/ED)

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Educational Intervention with High-Risk Infants

Ethel R. Kass, M.A.

Marian Sigman, Ph.D.

Rose M. Bromwich, Ed.D.

Arthur H. Parmelee, M.D.

Department of Pediatrics

and

Mental Retardation Center, Neuropsychiatric Institute

University of California at Los Angeles

Los Angeles, California

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The purpose of this paper is to review the philosophy and procedures of the educational intervention program which is part of the Infant Studies Project at UCLA. This project was organized in July 1971 with the dual aims of developing methods of identification of high-risk infants and techniques of intervention with such infants. Before describing the intervention program, the over-all project will be discussed.

For purposes of this discussion, the term "risk" is used to imply an increased probability of handicap in childhood. In the past, infants at risk have been identified on the basis of factors related to infant mortality. However, use of single indicators has not been successful in predicting delayed development in individual infants. Furthermore, deviant behavior tends to unfold and become more definitive during the first year. For this reason, the Infant Studies Project has developed a cumulative risk system which scores the infant's performance on various measures from birth through nine months of age.

In order to test the validity of this risk score system and the effectiveness of the intervention program, a sample of infants is being followed from birth. The longitudinal sample consists of premature infants, of 37 weeks gestational age or less, with birth weights at 2500 grams or less, and a control group of full term

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infants, of 39 - 41 weeks gestation and a birth weight greater than 2500 grams. A sample of prematurely born infants has been selected because the incidence of impaired functioning in childhood is greater among them than full term infants. Subjects include infants from all socio-economic groups and attempts will be made to equalize the representation of sex and socio-economic groups within the intervention program.

The longitudinal sample of infants is followed from birth to two years of age. Each child receives a cumulative risk score at nine months of age, based on his performance on the 14 measures included in the risk score system. Of those infants classified as high risk, 40 infants will participate in the educational intervention program from ten months to two years of age. The remaining high-risk infants are not offered educational intervention but serve as a control group for measuring the effects of intervention. The first series of outcome measures at two years of age will consist of developmental examinations, a cognitive test of sensory-motor behaviors, measures of receptive and expressive language, and a test of attention and exploration of toys.

Every infant and family who participates in the longitudinal study reveives medical, nursing, and social work help in an effort to

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provide support services regardless of risk category. Outpatient pediatric care includes well-baby clinic visits once a month from birth to eight months, once every two months until 15 months, and every three months until two years. Acute and emergency care is also provided when needed. Nursing assistance begins at the time of the infant's birth and continues throughout the two years. During the period after birth when the infant is in the hospital, the nurse provides information to the parents, reassures them, and helps them interact with the infant. Home visits are made from the time of discharge from the hospital to four months of age so that the nurse can support the parents, answer questions about the baby's routine, and observe the baby's milieu. From four months to two years, home visits are made when necessary. Social worker services consist mainly of consultation with the project staff. The social worker meets with families when this is necessary and she contacts local agencies so that families with particular problems receive assistance. All these services are provided for every infant in the longitudinal project. We consider such services an essential part of good pediatric care and do not aim to test their value.

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PHILOSOPHY OF EDUCATIONAL INTERVENTION

Clinical support services are often not enough to facilitate optimum development with high-risk infants. For such infants and mothers a concentrated program of educational intervention is required. The goal of educational intervention is to promote optimal development of high-risk infants through implementation of special programs of intervention focused on mother-child interactions. Both educational intervention and clinical support services are based on the belief that a strong, positive, and mutually satisfying mother-infant attachment is a primary factor in maximizing infant development. In the case of high-risk infants this mutual relationship between mother and child is often distorted, leading to child care practices which preclude optimal growth. Educational intervention is directed specifically at providing mothers with techniques, practices, and observational skills which enhance maternal ability. Specific content and procedures utilized in educational intervention are developed within this frame of reference.

Educational intervention involves content and process. Content includes the kinds and sequences of mother-child activities to be initiated, elicited, and encouraged; process consists of how this program of activities is to conveyed or taught to the mother or mother surrogate. In order to meet the wide range of needs presented by different high-risk infants and different mother-infant

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dyads, the educational program planned for each infant and family is highly individualized, based on careful assessment of three key areas; (1) developmental characteristics of the infant; (2) the nature of the parent-child interaction; and (3) the environmental resources and limitations of the family and home. The specific goal of this type of assessment is the formulation of an educational plan for each infant and caretaker.

The high-risk population includes infants with such diverse characteristics and handicaps that a single standardized intervention procedure cannot be applied to all infants. This is in contrast to intervention with culturally deprived children for whom standardized procedures have been planned and implemented based on the assumption that these children share common deprivations (Gordon & Lally, 1967; Honig & Brill, 1970). Each intervention must follow its own course with a high-risk infant but the organization of intervention as a process and the recording of information can be made standard. Process parameters have been specified and found to be consistent across subjects. Specified content, of course, varies with each mother-child unit. Increased diagnostic and treatment experience with high-risk infants will allow us to develop definitive categorizations of infant and mother characteristics which will be useful in selecting intervention procedures.

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The duration of intervention with each family is 14 months. Educational intervention, then, can be considered a short term process. The effectiveness of short-term changes in affecting long-term development has been questioned recently from both theoretical and clinical viewpoints (Clarke, 1968; Wachs and Cucinotta, 1971). Approaches to intervention directed at changing only the behavior of the child over a short time period may have limited consequences since the basic environment is unaltered. However, any experience which continues to generate reinforcing environmental events, even if the experience itself is transitory, should produce continous effects. We postulate that the breakdown of interaction between mother and handicapped child is a relatively permanent event in that it creates self-reinforcing consequences. More specifically, the mother's withdrawal from the child aggravates his disturbance and leads, in turn, to further maternal withdrawal. We believe that our educational intervention program can break this chain of events by creating its own chain with reinforcing feedback of a more positive nature. In other words, successful intervention which strengthens maternal sensitivity and skill creates a mother-child interaction in which the mother experiences success and the infant progresses to his maximum capacity. This mutually satisfying interaction should outlive the duration of the formalized intervention and produce both short-term and long-term results.

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Our intervention method differs from most previously used practices in that the mother is trained to bring about improvement in her infant's specific area of weakness and to observe and use his strengths in fostering development. The traditional approach to intervention with the handicapped child has frequently focused on the mother's emotional reactions to her child's handicap in an effort to aid her adjustment. When successful this method has long-term consequences because the child rearing milieu is modified. However, in many cases emotional support for the mother is unsuccessful on its own. Unless the mother of a high-risk infant knows how to improve her infant's development, her adjustment to his problems will remain incomplete.

In summary, most previous programs have worked either directly with the infant on his developmental problems or with the mother concerning her emotional adjustment to the child. In our program the focus of concentration is on improving the infant and mother interaction by training the mother to respond to the specific cognitive and developmental strengths and weaknesses of her infant. It takes into account the infant's developmental needs, the mother's chacteristics, and her ability to carry out specific intervention plans.

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PROCEDURES

Referral

The intervention staff is notified that a baby has been assigned to intervention and the infant's family is described in general terms by the well-baby clinic team. Two staff members are assigned the case with selection determined by staff schedules and characteristics. A Spanish-speaking staff member is assigned the case where the mother speaks only Spanish. A two member team approach is used in order to facilitate greater objectivity in the observations of the family and more flexibility in adjusting to the family's needs.

Assessment

The intervention team uses its own independent assessment procedures to augment those employed in the diagnostic study. Such additional assessment is necessary as the intervention team needs a less formal, more general appraisal of infant and family than that provided by the diagnostic measures. Since intervention is primarily carried out in the home through the family it is crucial that the infant's milieu be observed.

Assessment is made in three areas: 1) developmental characteristics of the infant; 2) nature of the parent-child interaction; 3) environmental resources and limitations of family and home. Parent interaction is

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assessed within a framework of a hierarchy of parental attitudes and behaviors (Bromwich, 1974).

Two home visits are made, each lasting one to one and a half hours, over the first two weeks. Besides providing information about daily routines and concerns, these visits serve to introduce the intervention staff to the family. The second home visit is video-taped and the intervener assumes a more active role with the infant, trying out new activities and materials. Special effort is made to arrange this visit at a time when the father can be present. The parents' response to shared observations gives some indication of the family's readiness to accept help and take initiative. The team is sensitive to the reactions of the parents -- procedures are not utilized which seem to cause discomfort.

Following a review of the diagnostic material collected earlier for the risk score, the clinic notes from well-baby visits, and their own observations, the educational intervention team schedules an appointment in the project center. This project center visit provides the opportunity to observe the infant in interaction with his parents with a wider range of materials in varying situations. Furthermore, the mother and infant are observed in a standardized play situation and their behaviors video-taped. This measure is used throughout intervention as a means of evaluating changes in mother and infant. The project center visit is also used to experiment with materials which are being considered as part of intervention.

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Intervention Plan

The team members formulate an initial plan which is shared with the pediatrician, nurse, and social worker, who have been responsible for the family. The plan covers the following subjects: 1) goals, 2) special considerations, 3) implementation of goals, and 4) evaluations. It also includes a proposed schedule of visits and preferred methods of communicating techniques. We have found that the manner in which the team communicates with the parent can be crucial for effective intervention. Different modes include: demonstration, in which specific activities are taught to the mother; modeling, where the intervener assumes that the mother will imitate her pattern of handling activities; and discussion, in which methods and alternative techniques are explained without demonstration.

(1) The goals which will be the focus of intervention for each family are summarized. In most cases, three or four major objectives are stated in the initial plan. These objectives fall into four main categories:

a) One major objective may be to increase the mother's sensitivity to her child. For this purpose, the intervention team may direct the parent to make specific observations of the child, ask the mother to note what elicits particular behaviors, and help the mother respond appropriately to particular cues.

b) A second major goal of intervention, may be to improve the infant's skills, particularly in specific areas of delayed development. For instance, the intervention team may aim to improve adaptive and language skills or the infant may be encouraged to develop more advanced social behaviors and a longer attention span. Occasionally, the area of fine motor or gross motor behavior may become the focus of intervention, but there is less emphasis on such skills in our program than has previously been common. We feel that cognitive development can be advanced despite some handicaps in these areas by emphasizing inputs in areas of strength.

c) A third focus of intervention may be on the over-all environment. For instance, the assessment procedure may indicate that the infant would benefit from less intense, less varied visual and auditory stimulation. On the other hand, a passive infant may need more stimulation than his environment provides for him.

d) A major objective in all intervention cases is to develop a comfortable working relationship with the family. Open communication, an important part of that relationship, is a prerequisite for successful intervention.

(2) The factors which will influence the direction and intensity of the intervention program are considered in the plan. For instance, the number of hours available to a working mother may affect her ability to participate in the program. In some cases, the relationship between adult caretakers of the child must be taken into account. In pilot work with Spanish speaking families, it became clear that the relationship of a younger mother to an older woman, such as a baby sitter or grandmother, often would not allow the mother to instruct the older woman. It was necessary for the intervention staff to work directly with the other caretaker. A consideration which might dictate the order of activities offered to an infant would be a parent's particular concern over a specific area of development.

(3) The program for implementing the more general goals are outlined in the plan. In those cases where maternal sensitivity is to be sharpened, the mother may be encouraged to spend regular, short periods of time interacting with her child. These play periods can then be reported to the team members and discussed with them. The discussion can point out to the mother some better methods of responding to her infant. If the major objective is in the area of improvement of skills, alternatives will be suggested that allow the infant more opportunity to practice needed skills, perhaps by working around some deficits.

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(4) Evaluation measures are specified as well as the timing of evaulation in the plan. The choice of evaluation measures is tied to primary goals. For instance, in those cases where the primary aim is to increase maternal sensitivity, the evaluation may consist of observations of the mother's choice of play materials and the quality and timing of her responses to her infant's cues. For those cases where the concentration is on improvement of skills, progress in this area will be noted. Expectations of progress may differ depending on the area of focus. For example, language may not accelerate as rapidly with practice as fine motor skills.

Intervention Visits and Evaluation

Intervention is maintained as a flexible process which deals with new developments as they occur. The focus, frequency, and location of intervention sessions which are specified in the initial plan may be altered during the course of intervention. For example, a focus of intervention often changes from sharpening the mother's sensitivity to helping her become an active participant in carrying out activities with the infant. The frequency of visits may increase from bi-weekly to weekly sessions, when new stresses occur.

Every four months, the intervention plan for each infant is reviewed. A project center visit is scheduled in order to evaluate changes in the infant and the relationship between infant and mother. The intervention plan is modified in light of this evaluation.

Intervention visits continue until the infant reaches two years of age. At this point, his developmental progress is assessed with the outcome measures mentioned above. Continuing programs will be provided for the child until referral to a nursery school is made at three years of age.

Recording of Information

The intervention team members keep careful records of all stages in the process of intervention. Information provided at time of referral and material collected during assessment is recorded. The initial plan and all subsequent modifications are preserved. After every home visit and project center session, the team members fill out a form describing the appointment in terms of the factors outlined in the initial plan.

The material collected on every infant will be subjected to retrospective examination and analysis. From this information, we hope to identify those variables which are significantly related to developmental progress as reflected in the two year outcome measures. Furthermore, such an examination may allow us to state certain generalizations about the process of intervention even if the content varies widely from one infant to another. Lastly, retrospective examination may uncover generalities in content across infants which have some relationship to progress during educational intervention. This retrospective analysis will follow and supplement the statistical analysis comparing the performance of intervention and control groups on the outcome measures.

REVIEW OF CASES

Although the Infant Studies Project was organized in July 1971, the first year of the project was devoted to pilot studies so subjects for the longitudinal project were not recruited until July 1972. Thus, the first infants diagnosed as high-risk on the basis of the cumulative risk score did not begin intervention until June 1973. Consequently, the intervention staff has had a two year pilot period in which to develop procedures and techniques of intervention. At present, four high-risk infants from the longitudinal study have entered the intervention program; two of these infants have been in the program for more than six months. Two infants suffer from general delays in development while the other two show significant motor problems as well as developmental lags.

During the pilot project, twenty-seven infants were followed by the intervention staff and sixteen are still in the program. These children were referred by the well-baby clinic staff. While less than half the pilot cases were born prematurely, almost all suffer disabilities like those observed among the high-risk prematures in the longitudinal sample. According to Gesell developmental examinations, all the infants in the pilot group were behind age expectations in developmental progress. Eight children also suffered problems in motor coordination, two had impaired hearing, and two had limited vision.

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The major goals of the intervention program with pilot cases were those outlined in the previous section under intervention plan. Among the 12 infants followed for more than one year, seven had deficits in a specific area which became a focus of intervention, while five mothers were helped to develop greater sensitivity and to provide more appropriate environments for their children. In the majority of those cases which had a specific focus, language was the area of concentration in the intervention program. All these infants were in the second year of life. In two pilot cases, the overall level of stimulation as well as the match between the child's cues and responses to these cues had to be improved. For one child, this meant encouraging the mother and baby sitter to provide more visual stimuli and toys and to interact more frequently with the child. For the other, the aim was to teach the mother to be less intrusive and provide less overall stimulation. Among the newer cases, the focus in one situation was on fine-motor control and in another on social responsiveness. With one infant, the intervention staff attempted to provide substitute learning experience with objects for a child who had difficulty in holding objects. The approach in the last two cases was more general, aimed at improving the interaction between mother and infant.

CONCLUSIONS

Certain general principles have become clear during this period of pilot work. First, assessment of the strengths of infant and parent is as necessary as assessment of deficits. Intervention is only effective when such strengths can be utilized in working on weaknesses. As Pearson (1972) suggests in a recent chapter on the management of handicapped children, intervention must be based on what the child can do rather than what he cannot do. As a corollary to this, intervention programs must ensure that disabilities do not mask potential in other areas. The child's lack of ability in some area may prevent him from practicing other skills. Disabilities may also interfere with the parent's recognition of the child's strengths. For these reasons, the intervention staff often focuses on strengths of the infant and family.

Another generalization is that the initial reception of the intervention team by the family does not predict the family's eventual receptivity to intervention. For this reason, the staff proceeds slowly in making judgements or offering suggestions until the nature of parental concerns and responsiveness is evident. In addition, families do not seem to utilize specific procedures until they are concerned about the area in which the

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suggestions are being made. While the intervention staff calls the significance of certain behaviors to the mother's attention, specific programming does not begin until the parent has expressed some concern about the behavior.

Finally, all intervention programs must attempt to set a balance between a focus on the child's development and responsiveness to the family's needs and style. Family counselling must not replace treatment of the child although it remains part of intervention. As Pearson points out, the temptation to emphasize family adjustment instead of the child's training is very strong particularly with children whose progress is slow. On the other hand, our experience has taught us that our ability to help the child or to train the parent as therapist is often limited until the family recognizes and accepts the child's problems.

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